

## **ABSTRACT OF THE DISCLOSURE**

A method for speech processing in a code excitation linear prediction (CELP) based speech system having a plurality of modes including at least a first mode and a consecutive second mode. The method includes providing an input speech signal, dividing the speech signal into a plurality of frames, dividing at least one of the plurality of frames into sub-frames including a plurality of pulses, selecting a first number of pulses for the first mode, with a second number of remaining pulses in the frame plus the first number of pulses in the first mode for the second mode, providing a plurality of sub-modes between the first mode and the second mode, forming a base layer, forming an enhancement layer, generating a bit stream including a basic bit stream and an enhancement bit stream, wherein the basic bit stream is used to update memory states of the speech system.